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Electrical World

NEWS ISSUE JANUARY 16, 1943

NEW DUQUESNE STATION DEDICATED—Army, Navy and Duquesne Light Co. officials are shown at the dedication of the new 60,000-kw. Frank R. Phillips power station, January 5. Left to right: P. J. Tyrrell, oldest power station employee; P. H. McCance, president; Frank B. Bell, Chief, Pittsburgh ordnance, U. S. Army; E. C. Stone, vice-president and general manager; Capt. P. L. Oliver, U. S. N.; P. A. Fleger, senior vice-president, Philadelphia Co.

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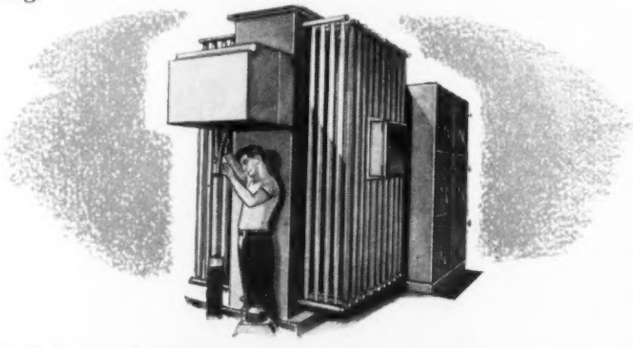
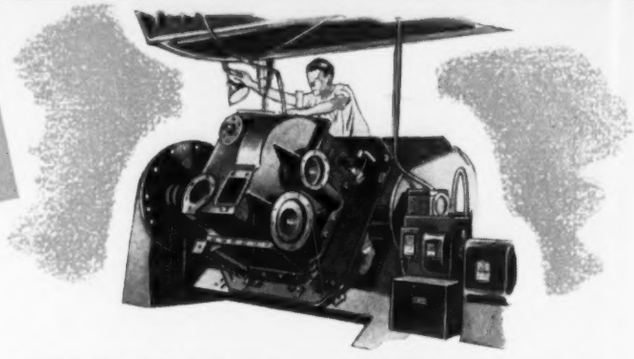
ELECTRICAL IDEAS *in Action!*

...HELPING TO MEET AMERICA'S WARTIME NEEDS

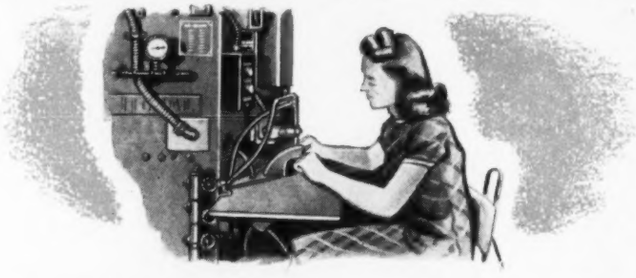
GREATER SPEED AND PRECISION in checking the thickness of bearing linings used in tanks and aircraft is made possible with General Electric's portable electric thickness gage. Developed in peacetime to measure the thickness of paints and other non-magnetic finishes on consumer products, the gage is now widely employed where the plating or lining of bearing metals on a steel base must be extremely accurate. It gives an immediate dial reading in thousandths of an inch without marring the bearing.



NINE MILES OF COPPER CABLE WAS SAVED recently by installing a unit substation at the load center of an Eastern war plant. The best spot-load distribution in the area called for six feeders, requiring a total of thirty-three 500,000-cm cables, and the distance from the load area to the power station was 1700 feet. With the installation of the unit substation, however, it was necessary to run only three high-voltage 500,000-cm cables back to the power plant. Cable requirements were cut from 56,000 feet to 5100 feet.



AN EXTRA DAY'S OUTPUT IS GAINED each week as a result of the development of this highly flexible trunnion fixture which G.E. uses to speed the drilling of marine gear casings. In addition to a revolving table for lateral rotation, the unit has an electrically driven arrangement for end-over-end rotation of the work in either direction through 360 degrees. More than 110 holes are drilled and tapped without calling for the crane to help reposition the casing in the machine, in contrast to six such repositionings previously necessary.



A THREE-WAY GAIN has been made in many plants doing war work by the substitution of resistance welding for soldering: (1) Tin and other solder constituents are saved; (2) The production rate is stepped up—doubled in some cases; (3) The training period for new operators is shortened. G-E electronic control helps make resistance welding precise and rapid, yet simple for the operator.

YOUR ENGINEERS serving industry and other users of electric energy have an important war job to do in helping to make the most of our power resources. Electrical ideas such as these, though sometimes minor in themselves, can add up BIG when widely applied—frequently saving energy, man power, and critical materials. General Electric is ready to assist in the cause of conservation by supplying further information or application aid wherever better electrical utilization can help to win the war. *General Electric, Schenectady, N. Y.*

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The Army-Navy "E" for Excellence in the manufacture of war equipment, now flies over six G.E. plants employing 100,000 men and women.

GENERAL ELECTRIC

Electrical World

NEWS ISSUE

Volume 119, Number 3 January 16, 1943

Record War Budget Omits Funds For Federal Power

TVA, Bonneville, other federal power agencies must carry on with old balances and own revenues — Only new grant proposed would give REA $30,000,000 additional borrowing credit

President Roosevelt's $109-billion-dollar war budget contains no recommended appropriations of new funds for construction of federal power plants. The government power agencies—Tennessee Valley Authority, Bonneville Power Administration and the projects of the Bureau of Reclamation and the U. S. Army Engineers—all are listed to carry on their reduced schedule of expansion in the fiscal year beginning July 1 with unexpended balances from the current year and from their own revenues.

REA Only New Grant

Only new grant of funds in the budget is for the Rural Electrification Administration, which the President proposed be given $30,000,000 additional borrowing credit on Reconstruction Finance Corp. funds. REA was allowed $10,000,000 in new funds for the current fiscal period, but an unexpended balance of nearly $30,000,000 more from the 1941-42 fiscal year's $100,000,000 allowance also was available to the agency.

The lack of new appropriations doesn't mean that the federal power agencies will be bereft of funds at the end of the current fiscal year. Due both to the fact that WPB has halted a number of government projects in its overall curtailment of both public and private power plant expansion, and to the sharp increase in revenues of the operating agencies, all of them will have money to complete scheduled construction for war needs. TVA's expenditure for the 1943-44 year are estimated at approximately $60,000,000—less than one-half the current year's pace—but figures for the other agencies are not available.

The government's two principal regulatory agencies in the electric utility field each are modestly cut in recommended appropriations for 1944, compared to amounts made available for this year. The President listed Federal Power Commission for $2,720,255, a reduction of $70,500 made up by slashes in the flood-control survey and printing and binding accounts. FPC's special defense activities appropriation remains at $519,255.

The reduction for the Securities and Exchange Commission is $112,000, to $4,798,000. The agency's salary allowance is reduced by $100,000, to $4,750,000, and its printing fund from $60,000 to $48,000.

BRITISH "RATIONING"—Britain is campaigning for voluntary fuel and power saving to avert shortages, and this London business girl demonstrates one way of cutting down electric consumption by using only one-half of the electric fire in her apartment living room. The upper half is in use, but the lower half has been disconnected

Utilities Not Under CMP Wire Limitation

The new 60-day inventory limitation of primary shapes and forms of copper, steel and aluminum—including all types of wire and cable—imposed by WPB under the Controlled Materials Plan is not expected to apply to utilities. A special directive is in the works exempting companies under Order P-46 from the inventory order, known as CMP Regulation No. 2.

Issuance of such a directive will mean that inventory control regulations in Paragraph F of P-46 will continue to apply to utility operations. The exemption is a recognition by WPB that utility inventories, generally, exceed a 60-day supply of copper wire, but that a forced reduction to that level would result in an inefficient immediate use of "surplus" stocks and would require continuous fabrication from new metal supplies. WPB's Power Division

ELECTRICAL WORLD—Published weekly by McGraw-Hill Publishing Company, Inc. Publication Office, 99-129 North Broadway, Albany, N. Y. Editorial and Executive Offices, 330 W. 42nd Street, New York, N. Y. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, Electrical World, 330 W. 42nd Street, New York, N. Y. James H. McGraw, Jr., President; Howard Ehrlich, Executive Vice-President; James H. McGraw, Honorary Chairman; Mason Britton, Vice-President; B. R. Putnam, Treasurer; Joseph A. Gerardi, Secretary; J. E. Blackburn, Jr., Director of Circulation. Subscription rates: Single copy 25 cents. In the United States, Mexico, Central and South American countries, $5 a year, $8 for two years, $10 for three years. Canada, $5.50 for one year, $9 for two years, $11 for three years. (Canadian money at par). Great Britain and British possessions 54 shillings for one year, 108 shillings for three years. All other countries $9 for one year, $18 for three years. Entered as second-class matter November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879.

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Cable Address: McGRAWHILL, New York. Member A.B.P., A.B.C.

is setting up an inventory control plan for using existing copper stocks in utility warehouses where they will be most effective to the war effort (ELECTRICAL WORLD, January 2, page 3).

CMP Regulation No. 2 is designed to hold the aluminum, copper and steel inventories of manufacturers and other users, where practical, to a maximum of 60 days' forward requirements. Acceptance of deliveries after April 1 is prohibited if delivery would increase inventories beyond prescribed limits. The controls are applicable item by item as listed in the regulation, although provision is made for acceptance of specified minimum economic quantities.

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Carolina Power Write-Down Ordered

The Federal Power Commission has directed the Carolina Power & Light Co., Raleigh, N. C., to dispose of $20,765,833 in "write-ups" claimed by the company to represent bona fide cost. This amount is about 22 percent of the $91,099,708 total book cost of the company's electric plant, as of January 1, 1937, according to the commission. Agreement by the company to the write-down of its properties was made in a statement filed with the FPC on December 23, 1942, following conferences. The company is a subsidiary of National Power & Light Co., major subholding unit in the Electric Bond & Share system.

In determining the amount of $20,765,833 as representing the minimum amount of write-ups in Carolina's plant account, the commission said:

"These write-ups, which have no place in the accounts of the company, were inserted in Carolina's plant account at the direction of the Electric Bond & Share Co., through the use of dummy intermediaries, paper corporations, transactions between associated companies, borrowing and shuffling of securities, mergers and consolidations, paper loans and paper sales of properties, and mere formal stipulated considerations."

The commission further directed that Carolina Power & Light prepare revised reclassifications of accounts and original cost studies with respect to the balance of $70,333,875 of claimed costs of properties, on the grounds that the utility did not base its estimated original cost studies on proper theories.

Previously, the Securities and Exchange Commission had conditionally approved an $18,648,438 write-down of the company's plant account (ELECTRICAL WORLD, January 2, page 9) in what was characterized as a compromise agreement with the FPC.

THIS WEEK'S NEWS BRIEFS

ONE HUNDRED DISHPANS provided hoods for street lamps on Columbia Street, New Westminster, B. C., under a dimout program of the ARP authorities which calls for the hooding of street lights to prevent sky glare. The dishpans were discovered in the city stores, the lips removed, and they were fitted to cover the type of lamp used on the street.

WENZEL HAVEL, 55-year-old former Austrian soldier, has received special recognition at the Westinghouse Lamp Division's Belleville, N. J., plant, where the joint committee of labor and management is campaigning to reduce absences. Mr. Havel was picked for top honors because he maintained a perfect record for nine years. Since he joined Westinghouse in July, 1933, Mr. Havel has never missed a day nor been late for work.

TEXAS SUPREME COURT has refused a writ of error to three utilities in a state of Texas suit to collect chain store taxes totaling $166,763. The companies were Central Power & Light, Southwestern Gas & Electric and West Texas Utilities Co., which in 1936 to 1940 paid chain store taxes on three groups of stores. The state claimed that the majority stock ownership of the three companies was centralized and that they were subject to taxation as a unit, and consequently to higher levies. In trial court, the state won judgment.

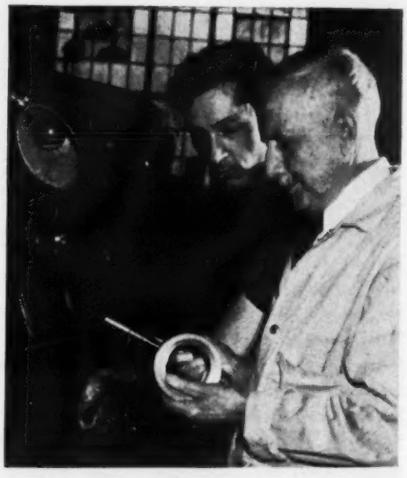
GRAND COULEE DAM'S Bureau of Reclamation employees are now on a 48-hour work week, as recommended by President Roosevelt, instead of the old 44-hour work week.

THE NATIONAL WAR LABOR BOARD has authorized the Tennessee Valley Authority to act on wage and salary adjustments for its 41,000 employees. TVA rulings are to be final, subject only to WLB's right to review its own motion.

THE ATTEMPT OF C. W. H. Bangs to put Huntington, Ind., in the utility business, which resulted in long litigation and three contempt of court terms for Bangs, former Mayor of Huntington, was brought to an end recently with the dismissal of 20 suits on appeal bonds posted in 1935. All the suits were ready for trial, but had not been pressed by the Northern Indiana Power Co., which won its injunction and was sustained by a decision of the Indiana Supreme Court.

VIRGINIA ELECTRIC & POWER CO. has hired four women to take over mechanical jobs formerly held by men in the meter department. One is a meter changer, two are assistant laboratory meter testers and repairwomen and one is a meter record clerk.

A VETERAN MACHINE SPECIALIST, retired for ten years, 78-year-old David Sloan, has been recalled to active duty at the Lynn River works of General Electric to instruct new workers in the operation of automatic screw machines. Mr. Sloan was first employed by the company at the Stanley works in New Britain, Conn., when he was 17 years old. Two sons are engineers, one with G.E.



PROOF THAT DIMOUT CONDITIONS reduce motorist's vision by 40 to 60 percent of its former sharpness is offered by New York University's Center for Safety Education. By means of a device known as the "dimometer" the university has already tested 1,000 drivers and found that less than 10 percent of them could see perfectly under simulated dimout lighting.

WPB Authorizes Essential Rural Line Extensions

Rescinding of former ban done at the request of the Department of Agriculture to help increase essential food production and relieve the acute farm labor shortage

Utilities were authorized by WPB this week to construct line extensions within specified limitations to farms which have or can get electrical farm production equipment (ELECTRICAL WORLD, January 9, page 48). Rescinding the ban on rural line building was done at the request of the Department of Agriculture as a means of helping to increase essential food production and to relieve the acute farm labor shortage.

Authorization of the new program is made in supplemental order P-46-c. Eligibility of farms to a line extension is to be determined by the county war boards, the order providing for certification by the boards to utilities that the extension is within the restrictions set forth.

Define Eligibility

The order makes eligible for electrical service farms which can be connected by a primary line of not more than 100 feet per "animal unit" and by secondary lines and services requiring not more than 30 pounds of copper. In addition, the farmer must have "electric farm equipment of sufficient capacity for the use contemplated" or be able to obtain such equipment, and have no other means available—such as a gasoline engine—to operate it. Appliances eligible are listed in the order—water pump for livestock, milking machines, milk cooler, incubator, brooder and feed grinder.

Primary lines built under this program must be single phase and of No. 6 galvanized steel wire, except that copper-covered steel wire or No. 4 or No. 6 ACSR wire may be used if available in excess inventory. Copper wire is permitted only for secondaries and services up to the 30-pound copper-content limit. Regular P-46 priority ratings may be used to obtain the No. 6 steel wire and other line materials, if these are needed.

Residential Service

The order does not touch upon the question of residential service. Utilities may provide residential service in connection with these extensions where the farmer is able to obtain material to wire his home.

Schedule 1 of the order provides a specific conversion table for computing the "animal unit" value of various kinds of livestock. One milk cow in a permanent herd is one unit. Likewise, each ten beef cattle, 30 ewes, or three brood sows in a permanent herd equal one unit. So also do 75 laying hens or 40 turkeys or geese. Livestock for meat is computed as follows: One unit for each 20 cattle, 16 lambs or 30 feeder pigs in feedlock, and for each 600 broilers or 250 chickens which aren't broilers.

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Coulee Output to Double in '43

Grand Coulee's generators delivered 900 percent more power in 1942 than in 1941, the Bureau of Reclamation reported recently. An estimated 92 percent of the energy was transmitted to industries manufacturing war equipment and supplies.

The plant's three 108,000-kw. hydroelectric units generated 1,859,695,000 kw.-hr. of energy during the year. The 1941 total was 204,917,000 kw.-hr. Maximum demand in 1942 was 380,000 kw.

With four new generators to be added during 1943, two of 75,000 kw. and two of 108,000 kw., prospects are bright, the bureau said, of doubling 1942 production totals. By next July installed capacity will be 690,000 kw., exceeded only by Boulder Dam and more than half the entire power capacity of the Pacific Coast in 1920.

MORE SCRAP—Philadelphia Electric Co. overlooks nothing when it comes to salvage. Above, a couple of running engineers from Chester station remove one of eight unneeded brass lighting fixtures to start it on its way to the melting furnace

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U. S. Court Upholds "Death Sentence"

The death sentence provision of the Public Utility Act was held constitutional this week by the U. S. Circuit Court of Appeals for the second circuit. Federal Judges Thomas W. Swann, Augustus N. Hand and H. B. Chase so ruled when they denied the petition of the North American Co. for a review of two orders of the Securities and Exchange Commission issued by the Commission against the North American Co. under Section 11-B-1 of the Utility Act.

Under those orders North American must divest itself of its various utility properties and confine itself to one system.

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Order $700,000 Portland Rate Cut

Portland General Electric Co. has received an informal notice from Ormond R. Bean, state utilities commissioner, to place $700,000 alleged excess earnings for 1942 in a reserve fund for the benefit of customers and to make immediate rate reductions in the Portland area equivalent to $700,000 annually. Such action, the commissioner said, would be in line with the company's promise to readjust rates throughout its territory based on further rate studies. The promise was made at the time rates were reduced in Salem and vicinity the middle of May, 1941.

James H. Polhemus, president, declared that the company is prepared to reduce rates in the approximate amount requested if such reduction can be put into effect on a contingent basis with a view to returning to the present level. Contingencies listed included: That the company continue to receive Bonneville

power in the quantity and at the rate now prevailing; that Bonneville does not take away from the utility certain large war customers; that possible new and unusual taxes do not dip heavily into future net earnings, and that dim-out and blackout regulations do not cut deeply into the company's residential and commercial revenues. Any reduction not taking these contingencies into consideration, Mr. Polhemus said, would be imprudent.

Commissioner Bean is unwilling to accept this type of "contingent sliding rate," believing that legal limitations and sound regulatory policies prohibit it. If negotiations cannot be satisfactorily concluded, he indicated, a formal hearing will have to be held to determine the issues involved.

Difference of opinion also exists between the commissioner and the company as to the value of the company for rate-making purposes. The commissioner contends that the figure is about $59,000,000, as against the company's contention of $63,000,000. Based on the company's figure, excess earnings for 1942 are considerably less than $700,000 rate reduction ordered.

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Michigan Tie-in Effected

Power to serve war production centers in lower Michigan is now flowing over an interconnection between lines of the Consumers Power Co. and the municipal power system of Lansing, according to Frank G. Boyce, vice-president of Consumers Power.

Important Changes in 4th Quarter P-46 Forms

Require listing of dollar value of maintenance equipment salvaged; details on deliveries of materials accepted for repair; prices paid for equipment; data on "excess" inventories

Fourth-quarter, 1942, report forms under Order P-46, containing several important changes from previous PD-194-B's, have been sent to major utilities. They are due to be returned to the Federal Power Commission, which acts as agent for WPB's Power Division in collecting and tabulating the data, by the end of this month.

Equipment Salvaged Listing

The revised form contains two new columns. One requires a listing of the dollar value, by material classes, of equipment salvaged in maintenance and repair operations during the period. The other calls for a dollar value listing of material sold from "excess inventories" to other utilities or war operations.

In addition, the fourth-quarter form splits into two columns the data to be reported concerning deliveries of materials accepted for repair and maintenance. Instead of a lump sum, utilities are to list the amount purchased from supplier and the amount obtained from other utilities.

Another innovation is a request for the prices paid for transformers, meters and conductor purchased from mills and jobbers. Purpose of this data is to give the Power Division a price index showing what utilities are buying and what they are paying.

As with the two previous PD-194 reports, the fourth-quarter form is accompanied by a request for a listing by specific items of material of "excess inventory" of critical materials, such as conductor, transformers, motors, etc. The listing is expected to be considerably larger this time than on previous reports because of the fourth quarter slash in the allowable inventory of wire and cable, from 100 to 60 percent of the 1940 base. The catalogue of material reported as in excess of P-46 limits is to become the base "working stock" for the materials redistribution program being set up by the Power Division's new Inventory Control Section (ELECTRICAL WORLD, January 2, page 3).

It is pointed out that utilities which do not receive the PD-194-B report form and the request for the excess inventory tabulation from FPC are not required to file P-46 operating reports.

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FIRST HEALTH CLUB CHARTER—Charter for Wisconsin's first "Health for Victory Club," conducted by Wisconsin Public Service Corporation for the Universal Foundry Co., Oshkosh, is turned over to A. C. Ziebell, president of the foundry firm, by E. S. Schrauk, Oshkosh division manager of Public Service

Gas Users Must Convert if Possible

WPB's limitation orders regulating use of natural and manufactured gas have been amended to provide a means for cutting off gas supplies to consumers who fail to take advantage of alternative fuels. The move is a preliminary step in the development of a program of conversion from gas to coal in potential gas shortage areas.

The amendments to Order L-31 (natural and mixed gas) and Order L-174 (manufactured gas) provide that consumers may be denied gas by WPB order when (1) they have standby equipment but fail to provide themselves with fuel to operate such equipment, and (2) can, without unreasonable expense or hardship, convert from gas to a less critical fuel but fail to do so.

Oil-rationing regulations already contemplate cutting off supplies to industrial and commercial users in either of these categories. Administration of the gas conversion program is in the hands of WPB's Power Division.

Canada's 1942 Output, New Plant at Record

New installations aggregated 378,600 hp., construction in progress will add 1,000,000 hp. more in next 18 months — Output over 37,000,000,000 kw.-hr., Dominion Bureau reports

The successful efforts of the Canadian hydro-electric industry to meet constantly increasing demands for power for wartime industry are reflected in the annual review of progress in the Dominion issued by the Dominion Water and Power Bureau, Department of Mines and Resources, Ottawa.

New installations during the year aggregated 378,600 hp., bringing Canada's total hydraulic development to 9,225,838 hp., the report said. The construction of new transmission lines, the interconnection of existing systems, the diversion to primary use of large amounts of hydro-electric energy formerly sold for steam-raising in electric boilers, the continuance of daylight saving throughout the winter months and the diversion of power from certain non-essential to essential uses also contributed to meeting the wartime power demands.

Monthly figures of output of central electric stations issued by the Dominion Bureau of Statistics indicate that a new record for the generation of electricity of more than 37,000,000,000 kw.-hr. during the year has been made. Construction now in progress will add 1,000,000 hp. more in the course of the next 18 months.

The Provinces Report

In British Columbia the West Kootenay Power & Light Co. has under construction its fifth generating station on the Kootenay River. The station is designed for four identical generating units of 34,000 hp. each under a head of 85 feet. The West Canadian Hydro-Electric Corp. installed a second unit, 3,800 hp., in its generating station at Shuswap Falls, increasing its capacity to 7,600 hp.

In Alberta the Calgary Power Co.'s Minnewanka Lake development began full operation on October 15, 1942. The development provides power for an extensive electrochemical munitions industry and comprises a reservoir of 180,000-acre feet in Lake Minnewanka and a 23,000-hp. generating station on the Cascade River. The same company augmented the supply of power to the four generating stations on the Bow River by enlarging its storage reservoir on upper Kananaskis Lake by 55,300 acre-feet. In Saskewatchan the Churchill River Power Co. constructed a dam at Whitesand Rapids at the south end of Reindeer Lake to provide additional storage for water for power production at its generating station at Island Falls.

In Ontario during 1942 installation totaling 66,900 hp. came into operation. The Hydro-Electric Power Commission, which generates 75 percent of the power produced in the province, completed its second hydro-generating station on the Madawaska River. The plant has an installation of 56,000 hp. The building of Bark Lake Dam 65 miles upstream from the station created a reservoir impounding 300,000 acre-feet of water. The commission is also proceeding with the construction of a new plant at DeCew Falls. This plant draws water from the Welland ship canal and will have an initial installation of 65,000 hp., which is expected to be in operation in 1943. The commission installed additional transformer equipment, aggregating 310,000 kva., at various points throughout the province, mainly in existing stations. The total transmission circuits constructed consisted of 12 miles of 110,000-volt, 37 miles of 13,000 to 44,000-volt and 74 miles of rural circuits. Following the addition of a 10,500-hp. unit last year in its Upper Falls station on Montreal River, the Great Lakes Power Co. added a 10,900-hp. unit in August, 1942, to its plant on Lower Falls on the same stream.

280,400 Hp. in Quebec

In Quebec hydro-electric installation during 1942 totaled 280,400 hp. and much additional construction is in progress. The Aluminum Power Co. added two units of 55,000 hp. each to its Chute-a-Caron station on the Saguenay River and brought the first two 85,000-hp. units of its Shipshaw development of the same stream into operation. The installation of eight similar units and the transference of the two units of 55,000 hp. from the Chute-a-Caron station are planned. The La Sarre Power Co. added a 400-hp. unit to its generating station at Rapid No. 5 on the La Sarre River, bringing its installation to 1,225 hp.

Additions in progress to the Shawinigan Water & Power Co.'s system include a 40,000-hp. unit at Rapide Blanc station and one of 44,500 hp. at La Tuque for operation in July, 1943. The

BOND-BUYING BULL'SEYE—For voluntarily contributing 15.6 percent of salaries for war bonds through payroll deductions Wisconsin Power & Light employees, above, are awarded the Treasury Department's bull'seye flag. At the recent presentation were (left to right) Grover C. Neff, president; Howard T. France and Alfred J. Lemke, representing the fourteen company employees with two sons in service, and Franklin P. Van Santt, who presented the flag for the Dane County committee for War Savings Bonds and Stamps

Beauharnois Light, Heat & Power Co. has carried out extensive dredging of its intake canal and is enlarging the tail-race. Montreal Light, Heat & Power Consolidated installed a 110,000-volt underground transmission circuit across Montreal to permit more advantageous use of power derived from the St. Lawrence and St. Maurice rivers. Two 40,000-kw. substations were added in the Rosemont and Guy Street districts. In the easterly section of the province the municipality of Tadoyssac has a 300-hp. hydro plant under construction on the Moulin-a-Baude river. The Lower St. Lawrence Power Co. is planning the development of a second site on the Metis River with an installation of 5,000 hp. Southern Canada Power Co. raised to 110,000 volts the voltage of its 60-mile line to St. Cessaire and has under construction a 48,00-volt line from Beebe to Rock Island.

No new hydraulic installation was in progress in New Brunswick during 1942. The New Brunswick Electric Power Commission is installing a new 7,500-kva. steam turbo-generator in its Grand Lake station. In Nova Scotia the Avon River Power Co. completed its Lumsden station at Hell's Gate on the Black River. The station has a 4,500-hp. turbine driving a 3,500-hp. alternator. Additional steam turbo-generators are being installed in the Halifax plant of the Nova Scotia Light & Power Co.

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Northwest Utilities Paid 20-Million Tax

Privately owned and managed utility companies operating in the Pacific Northwest states of Idaho, Montana, Oregon, Utah and Washington paid $20,717,985 in taxes in the year 1941. Of the total, $9,304,346 went to the federal government and $11,413,638 went to states and their local taxing agencies. These figures were revealed in a survey of electric utility taxes for 1941 in that territory, conducted by the Northwest Electric Light and Power Association and released by Berkeley Snow, executive secretary, recently.

The report of this survey, which covers 99 percent of the privately owned companies in the area, tabulates the state taxes from 36 companies by states and broken down by the classes of taxes levied in the several states. Largest item in the breakdown is the operating property tax, which totals $7,786,758 for the five states. The three states which levy a tax on output or revenue —Idaho, Montana and Washington— collected a total of $1,368,000 from the 31 companies operating in these states. This is the second largest item in the tabulation. State unemployment taxes took $587,728, while certain municipalities in Montana, Oregon, Utah and Washington levied nearly $505,000 in municipal, occupation or franchise taxes.

The breakdown of federal taxes paid by the 36 reporting companies, totaling more than $9,000,000, showed that income taxes accounted for more than 73 percent of the total, $6,852,891. The electricity sales tax yielded $1,775,000, while the capital stock tax took $357,000. Social security, including old age benefit and federal unemployment taxes, amounted to $307,517.

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Approve Agecorp Ohio Units Sale

The Securities and Exchange Commission has approved a proposal of the trustees of Associated Gas & Electric Corp. covering the sale of three Ohio subsidiaries for an aggregate base price of $1,100,000 (ELECTRICAL WORLD, December 26, 1942, page 62). The subsidiaries involved were the General Utilities Co., Western Reserve Power & Light Co. and New London Power Co., which were sold to a group of cooperatives and the village of Lodi, Ohio.

GRAND COULEE "TANK"—There are tanks and tanks. The one above, being assembled in the Grand Coulee Dam power house, will hold the windings of a giant transformer. The finished unit will be a 60-cycle, two-winding, single-phase, oil-immersed, water-cooled, inert-gas-filled, outdoor-type transformer, rated at 36,000 kva. The transformer, and two other of like size, will boost the voltage of the current at the generator, 13,800, to 230,000 volts on the transmission line

Dedicate 60,000-Kw. Duquesne Station

(See front cover)

The new Frank R. Phillips power station, a 60,000-kw. unit, was dedicated January 5 by the Duquesne Light Co. in the presence of Army, Navy and company officials. The new unit brings the generating capacity of the company up to 624,000 kw., or about 25 percent more than pre-war capacity. A similar unit, at the Reed power station, was completed in 1941.

The dedication ceremony was opened by E. C. Stone, vice-president and general manager of Duquesne Light, who said that the plant had been in test operation for several weeks "and has demonstrated its ability to deliver power substantially in excess of its rating." He declared that the plant operates at higher speed and at higher steam pressures than older company installations and that 15 to 20 percent less coal should be required to produce the same amount of energy. Despite wartime difficulties in getting equipment, Mr. Stone said, the plant was finished in 18 months.

Mr. Stone then turned the plant formally over to P. H. McCance, president, who accepted it for the community and named it for the late president of the company, Frank R. Phillips. In his address Mr. McCance said that 90 percent of the electricity generated by the company is essential to the war effort in the Pittsburgh district. Approximately 60 percent of the total output is utilized for war production and some 30 percent for essential non-military activities.

The actual unveiling was done by Patrick J. Tyrrell, oldest employeee of the power stations department of the company. Brief addresses were made by Capt. F. L. Oliver, U. S. Navy, and Frank B. Bell, chief of the Pittsburgh ordnance district.

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Deny Rehearing on Sacramento Valuation

Petitions of both Pacific Gas & Electric Co. and the Sacramento Municipal Utility District for rehearings in the recently decided valuation case (ELECTRICAL WORLD, December 26, page 56) have been denied by the California Railroad Commission. P.G. & E. held in its petition that the commission had failed to consider all facts in setting a value for the portion of its distribution system which the district seeks to condemn. The district contended that the $11,632,000 value found by the commission was too high. The matter now goes before the federal courts.

Nikola Tesla, "Electrical Wizard," Is Dead at 86

Inventor who devised first practical application of alternating current, developed the induction motor and made scores of original contributions to electrical industry passes

Nikola Tesla, one of the world's greatest electrical inventors, credited with having devised the first practical application of alternating current, with the development of the induction motor and dynamos, transformers, condensers and specialized coils, died on January 7 at his suite at the Hotel New Yorker, New York. He was 86 years of age.

Nikola Tesla at 80

Worked With Edison

Dr. Tesla was born in 1856 at Smiljan, Lika, at that time a border country of Austria-Hungary, now Yugoslavia. He studied for four years at the Polytechnic School at Gratz, devoting most of his time to mathematics, physics and mechanics, and then spent two years at the University of Prague. In 1881 he went to Paris, where he worked as an electrical engineer, and the following year he went to Strassbourg, where he installed a mechanical plant. It was in 1884 that he came to America. For some time he worked with Thomas A. Edison at West Orange, N. J., chiefly designing motors and generators, and then organized his own company, the Tesla Electric Co. It was at this time that he started to produce motors for alternating current, in which he put into practical form the ideas of previous inventors to make a workable induction motor. This invention came in 1888. The following year was devised his system of electrical conversion and distribution by oscillatory discharges, and in 1891 the famous Tesla coil, or transformer, was invented.

Recipient of Edison Medal

Work on thesee lines led quite naturally to his investigations in the field of radio power transmission. In addition he made various other scientific investigations, especially in the fields of low-weight, high-powered prime movers and atmospheric nitrogen production.

In 1917, on the twenty-ninth anniversary of the reading of his paper before the American Institute of Electrical Engineers announcing his work in polyphase transmission, he received the Edison medal for "early original work in polyphase and high-frequency electric currents."

A fantastic figure in his later years, given to making startling predictions to the press at annual interviews, Dr. Tesla reported at various times that he was working on a "death beam" powerful enough to destroy 10,000 airplanes at a distance of 250 miles and annihilate an army of 1,000,000 soldiers instantly; that interplanetary communication was practicable; that he had plans for the construction of a new tube which would produce radium for as little as $1 a pound, and that he had visions of harnessing the sun's rays and utilizing the energy of the sea.

He was considerably handicapped most of his life for lack of funds. As far as business was concerned, he was anything but practical, but he did not seem to worry much as long as he had a place to work. His one business venture —the formation of the Tesla Electric Co. in New York in 1887—was a complete failure financially. For many years he lacked even a place to work, conducting his experiments in hotel rooms. Despite his startling pronouncements about some futuristic "amazing invention" he was working on, he was personally shy and his tastes ran to the ascetic. He never married and preferred his workshop to the society of his fellow men. He ate sparingly, drank neither tea nor coffee, yet regarded alcohol in moderation as virtually the elixir of life.

Dewey Asks State Water Power Control

Gov. Thomas E. Dewey, in his maiden message to the New York state Legislature, had the following to say on the subject of water power:

"It was recently decided by the Court of Appeals that the present law prevents collection by the state of rental for its water power resources now being diverted to the use of private utility companies (ELECTRICAL WORLD, December 19, 1942, page 7). It is my hope that as one of the first acts of 1943 it shall be declared by law that the water power resources of the state shall be preserved for the benefit of the people in perpetuity. Now is the time to make that policy effective by legislation requiring a proper rental for water power used under previously existing authority. I earnestly recommend such legislation to your honorable bodies."

In the meantime the Niagara Frontier Planning Board, in its annual report submitted to Governor Dewey, advocated abolition of the New York State Power Authority "to avoid confusion and unnecessary duplication of effort."

"It would seem that this state agency has outlived any possible usefulness," the report said in part, "and we respectfully suggest that in the interest of economy and to prevent any further waste of state funds it be abolished and all its duties, functions and powers be transferred to the Water Power and Control Commission in the Department of Conservation. . . ." The report cited disputes between various state agencies which claim or possess overlapping powers.

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FPC Rules on Wisconsin Tie

War emergency interconnections between the electric systems of the Wisconsin Electric Power Co. and the Public Service Company of Northern Illinois will not otherwise affect the status of the Wisconsin company under the Federal Power Act, according to a recent ruling of the Federal Power Commission.

The proposed interconnection, which was requested by WPB's power division, is to be made by joining the 132-kv. transmission lines of the two systems. The capacity of the lines so joined will be approximately 80,000 kva. The interconnection will make available to either system a substantial portion of its combined reserve capacity and afford material protection in emergencies in an area of vital war loads and a low margin of operating reserves.

Accounting Methods Discussed by N.E.L.P.A.

Customers accounting and collections, payroll, stores, personnel, fixed capital and power pool accounting were the principal subjects under discussion at a round-table conference of the Northwest Electric Light and Power Association recently. The meeting of the accounting and business practice section of the association, was under the direction of J. H. Clawson, Puget Sound Power & Light Co., chairman. Engineers and operating men meet at Seattle in January.

Meter Reading Practices

Revamped meter reading procedures ranged all the way from reading all meters as usual, both urban and rural, through reading quarterly in rural areas, to no readings at all except by customers on return postcards, was brought out in the discussion of customers' accounting practices, with E. W. Bredemeier, Portland General Electric Co., discussion leader. Mr. Bredemeier stated his company was still reading all meters. Several companies have gone to quarterly reading in rural territory with interim monthly bills estimated, but one company operating in California found the regulatory commission of that state unwilling to approve the practice. H. W. Millay told the group Pacific Power & Light Co. had gone all the way to customer reading by postcard. The way was paved for this by a broadside sent to customers saying, "12 postal cards will save 600,000 miles of tires for Uncle Sam."

Collection policies have likewise been pretty generally revised in the light of gas rationing and tire conservation. Employment of collectors has been abandoned and policies have generally been stiffened, particularly with respect to cut-offs for non-payment. Opinion was divided as to the use of neighborhood pay stations, some companies finding them expensive, but there was general agreement that payment to the station on a transaction basis was preferable to a percentage basis.

Paul R. Enright, Eastern Oregon Light & Power Co., outlined the new "Victory Tax" law and suggested a method of applying the withholding deductions allowable. Some confusion exists in the interpretation of the wage stabilization measure, it was apparent. Experience with women meter readers had not generally been satisfactory it was brought out in further discussion of personnel problems under Ralph W. Lawlor, Northwestern Electric Co., discussion leader.

Problems involved in establishing a minimum working inventory under P-46 and how to handle material ordered for special jobs outside P-46 were subjects for an exchange of experience in the discussion of material control under the leadership of T. W. Fryou, Portland General Electric Co. It was brought out that WPB doesn't want to see the surplus above mimimum working inventories used up too fast, but does want to see this exchanged between companies in emergencies.

Changes in accounting procedures necessary to set up costs of units of property for retirement purposes were explained in the discussion of capital accounts under R. W. Miller, Idaho Power Co., discussion leader. Some companies have installed a system of completion reports on job orders to include all costs in detail, with car mileage shown and reference numbers to the payroll to get accurate labor charges. Also time studies of particular jobs are being conducted as a guide to labor costs in the past.

"Pool" Accounting Described

Charles C. Bonin, Ebasco Services, Inc., and a member of the group that coordinates the operation of the Northwest's new power pool, explained the method of accounting for energy transfers by a system of scheduling rather than by meter readings. With power flowing in all directions through four separate loops, with Bonneville as the hub, meter readings mean nothing, he explained, but by a system of scheduling hour by hour deliveries and receipts between companies in advance, and billing on the basis of these schedules, the actual operating deviations tend to wash themselves out in time or else tend to reflect the most beneficial operating condition for each company. Many new problems of accounting for these transfers moneywise within the individual companies have been created, and the group agreed that uniform treatment of these accounting problems was desirable.

MEETINGS

Previously Listed

American Society of Civil Engineers — Annual meeting, headquarters, New York, N. Y., January 20-22. George T. Seabury, secretary, 33 West 39th St., New York, N. Y.

American Institute of Electrical Engineers — National Technical Meeting, New York, N. Y., January 25-29. H. H. Henline, secretary, 33 West 39th St., New York, N. Y.

Edison Electric Institute — Accident prevention committee, Hotel Gibson, Cincinnati, Ohio, February 8-9; transmission and distribution committee, Wm. Penn Hotel, Pittsburgh, Pa., February 11-12. Col. H. S. Bennion, managing director, 420 Lexington Ave., New York, N. Y.

American Society for Testing Materials—Committee week and spring meeting, Hotel Statler, Buffalo, N. Y., March 1-6. R. E. Hess, assistant secretary, 260 S. Broad St., Philadelphia, Pa.

P.G.&E. Appealing SEC Jurisdiction

Hearings on a petition to determine whether Pacific Gas & Electric Co. is engaged in interstate commerce and thus is subject to regulation by the SEC have been held before the Ninth Circuit Court of Appeals in San Francisco. The company was seeking relief from a prior court order that it was subject to federal regulation because in the opinion of the court and the SEC it qualified as a subsidiary of the North American Co.

The government has claimed that since 17 percent of Pacific Gas & Electric stock is owned by North American, the California utility, under the holding company law, is a North American subsidiary. The company has contended that because it is independent and is doing business only in California, it is not subject to SEC jurisdiction, but only to regulations of the California State Railroad Commission.

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FPC Authorizes Cincinnati Merger

Following approval by the SEC, the Federal Power Commission has announced its authorization to the Cincinnati Gas & Electric Co. to merge its facilities with those of the Harrison Electric & Water Co., the Hamilton Service Co. and the Loveland Light & Water Co. All four companies are wholly owned subsidiaries of the Columbia Gas & Electric Corp.

After the Harrison company has sold its Indiana properties the Hamilton, Harrison and Loveland companies will be merged into Cincinnati (ELECTRICAL WORLD, December 5, 1942, page 20), the latter continuing as the surviving corporation.

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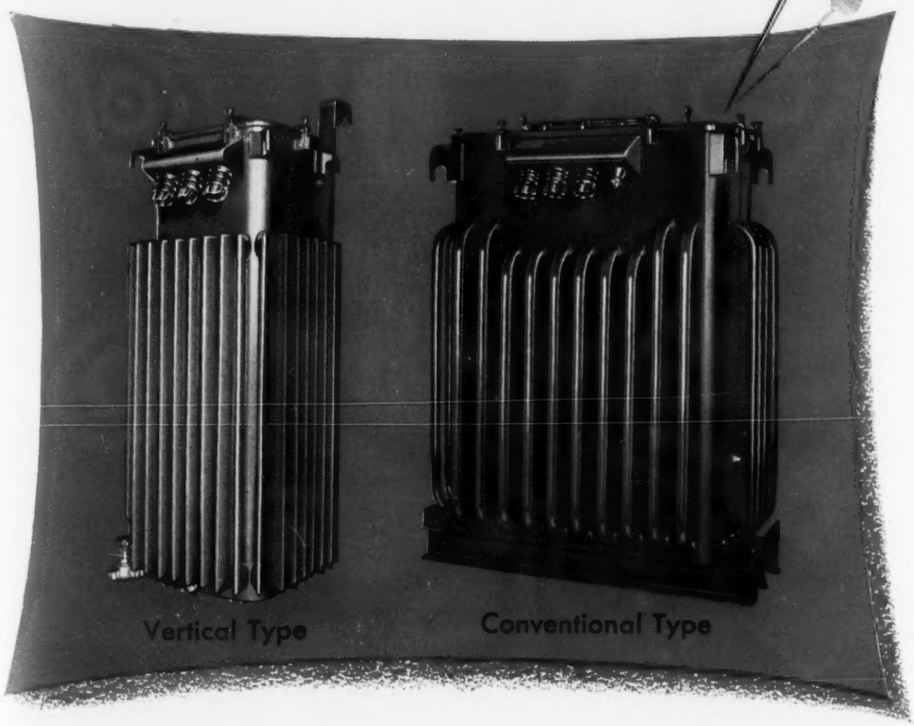
Utilities' Copper Salvage Reported

Scrap drives of electric utility companies in 1942 netted a total of 24,000,000 pounds of copper for the nation's war needs, together with large quantities of aluminum, brass, iron, steel, lead, zinc, rubber and other scarce materials, the Edison Electric Institute reported recently in summarizing the results of a survey.

Copper turned over to scrap dealers represented approximately 10 percent of the normal annual requirements of the industry. So thorough was the job done by the utilities that the potential copper salvage for 1943, it was said, will only be about half the amount gathered in 1942.

NOW! a complete new line of L-M THREE PHASE TRANSFORMERS



"They're the biggest transformer news since the birth of the Round-Wound!" declare engineers who have carefully pre-viewed the new L-M Three Phase Transformers.

Every unit in the complete line measures up to the L-M tradition of giving you more for your transformer dollar because every one of them is sound in the fundamentals ...of design, materials, workmanship. That is why, wherever the most efficient and economical operation of your distribution system calls for a three-phase transformer, it will pay you well to install an *L-M* Three Phase Transformer.

VERTICAL TYPE

L-M Three Phase Transformers save space, eliminate platform constructions, give you trim, neat, on-the-pole installations. You will find these L-M Vertical types in ratings up to 150 Kv-a, and up to 13,200 volts. *Ratings up to and including 75 Kv-a have L-M Round-Wound core and coil assemblies.*

CONVENTIONAL TYPE

L-M Three Phase Transformers in sizes 100 to 500 Kv-a are generously designed throughout, insure rugged, punishment-taking stamina. Round coils, free from right angle bends, assure greater mechanical and impulse strength, damage-free insulation and long service life.

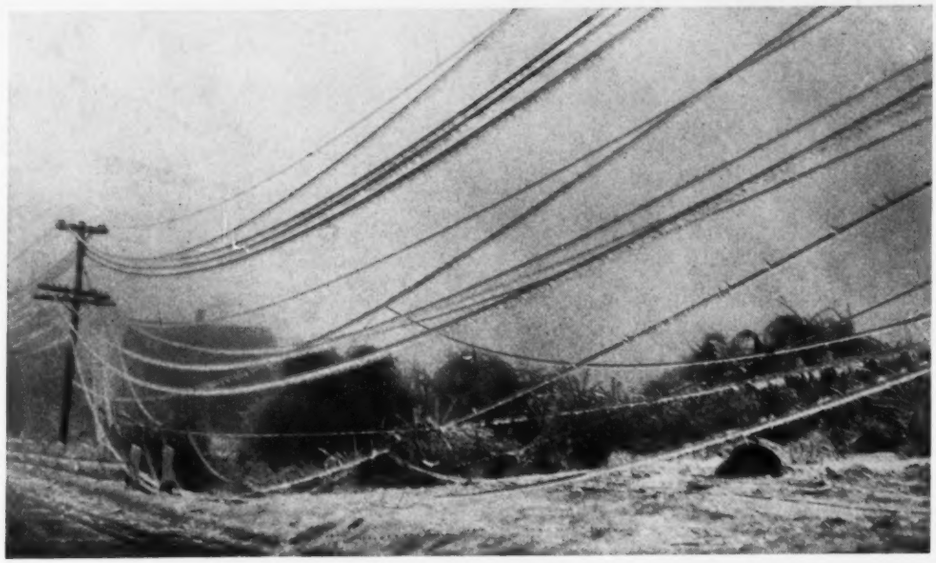
GET FULL INFORMATION

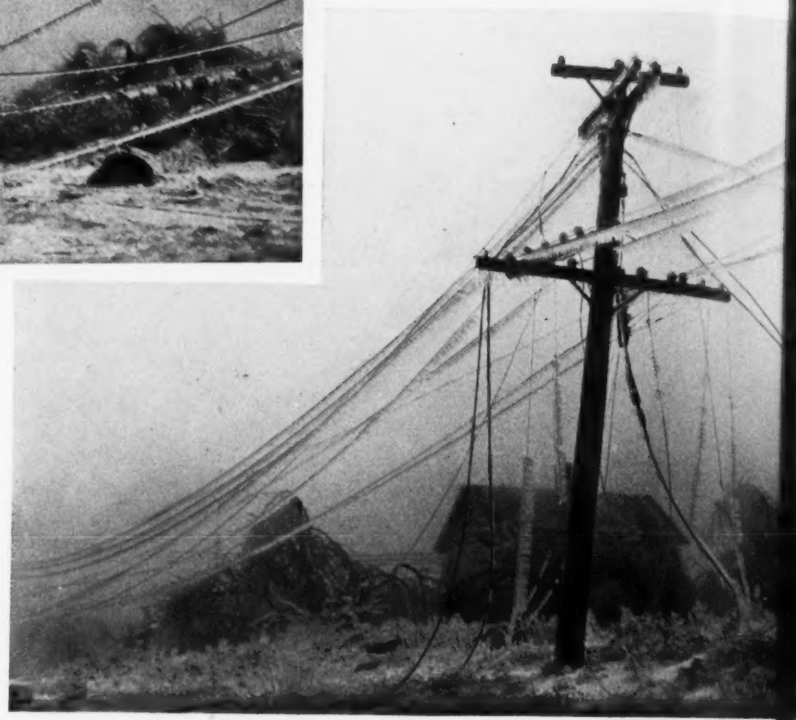
Before you invest in another three-phase transformer be sure to get the full, interesting story about the complete line of L-M Vertical Type and Conventional Type Three Phase Transformers. The new *L-M Three Phase Bulletin*, No. 43161 is ready. Ask your L-M representative, or write Line Material Co., 802 N. 8th St. Milwaukee, Wis., for a free copy.

LINE MATERIAL COMPANY

THE INDUS

IN PICTURE





ICE AND MORE ICE—These two shots, taken at Wolcott, Conn., by the Connecticut Light & Power Co., visualize dramatically the conditions facing the company's emergency crews when they attempted to restore service during the record ice storms which lasted for three days around the New Year. The picture above shows the main artery from Waterbury to Hartford and Bristol. Linemen were unable to keep pace with the breaks in this section. At right, anchor braces as well as crossarms and cables were victims of the 4-in. coating along the Bristol road

ARKANSAS LINEMEN HONORED—C. S. Lynch, executive vice-president of Arkansas Power & Light Co., presents the National Safety Council's medal to Sherman D. Patterson, company lineman, for resuscitating a man who had attempted to burn his way out of a jail at England, Ark. Patterson applied the prone-pressure method for 45 minutes before the man responded. In the picture below, (right), H. F. Minnis (with citation), operations manager of the utility, presents the Harvey C. Couch gold medal to Harry D. Swartz, a member of the company's line department at Batesville. Swartz resuscitated two fellow employees

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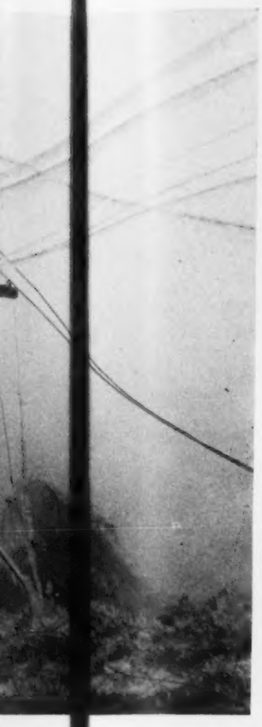
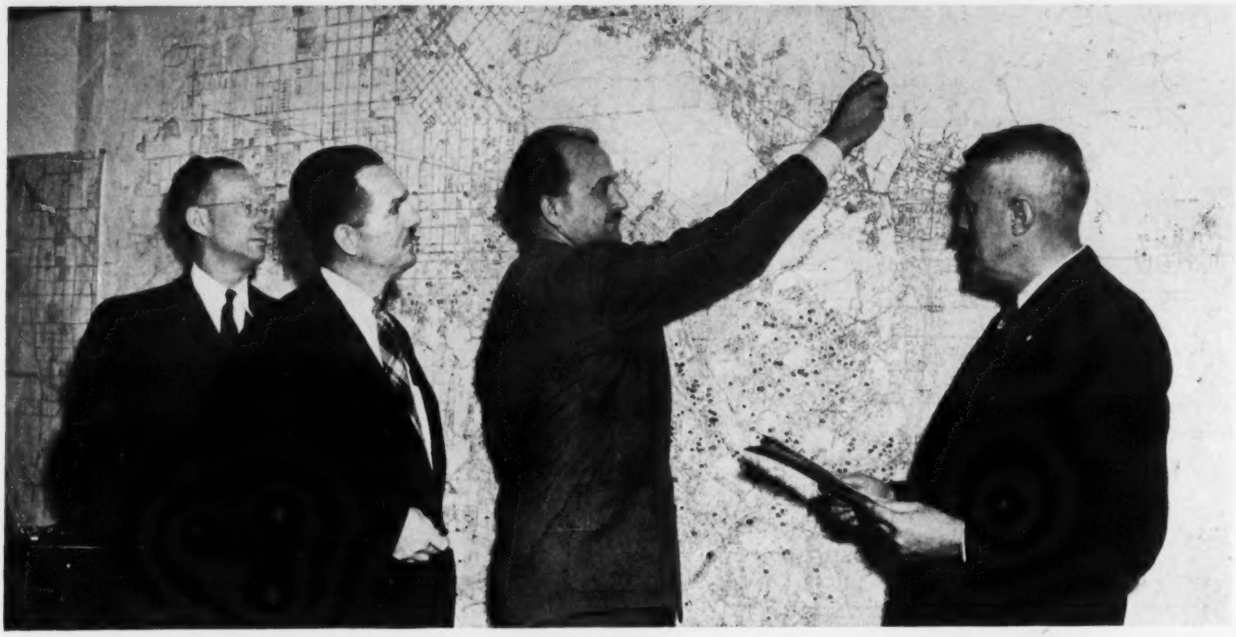


SHIELDED STREET LIGHTS — Fall Rive Mass., before and after eq pping downtown street-ligh units with shields to reduc y-glow in accordance wit U.S. Army regulations. Mo vehicle headlights play thei rt in both pictures, but a de reduction in upward lu s flux is emphasized by change. Courtesy Fall River ald.



PLANNING GAS AND TIRE SAVING—Large scale maps of Los Angeles are being used by the power transportation committee of the Water and Power Bureau to spot employee residences and induce auto drivers to organize "Share the Ride" clubs to save rubber and make the gasoline rationing allotment stretch. There are 6,400 employees and Los Angeles comprises 451 square miles, so the problem is a real one

MORE KILOWATTHOURS FOR VICTORY

17-YEAR-OLD BREAKERS MODERNIZED ...to save time and critical materials

A southern utility serving war production centers was adding a 35,000 kv-a turbogenerator to meet increased load demands. New breakers could not be supplied in time. Speed and critical material savings were vital. Westinghouse engineers suggested rebuilding and modernizing some Westinghouse breakers originally installed in 1925.

The rebuilding job saved two valuable months and quantities of copper and steel for nine new breakers. The key to the rebuilding was the installation of improved "De-ion" grids to meet the larger interrupting capacity required. In addition, the reduction in arcing time with "De-ion" grids means improved system stability, less maintenance for contacts and oil, and increased safety to operators.

Modernizing and rebuilding can be done profitably on many breakers installed since 1923—outdoor breakers 15-230 kv—indoor breakers 15-34.5 kv. Westinghouse engineers will be glad to consult with you on this method of protecting "More Kilowatthours for Victory." Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania. J-97066

Westinghouse

PLANTS IN 25 CITIES... OFFICES EVERYWHERE

WESTINGHOUSE

New Year Output Upswing Continues

Figures on the amount of electrical energy distributed by the light and power industry crowded the four-billion-kw.-hr. mark for the week ended January 9. According to the Edison Electric Institute, the actual figure was 3,952,587,000 kw.-hr. for the week, as compared to a revised figure of 3,779,993,000 kw.-hr. for the week ended January 2. The January 9 output week represented a 13.8 percent increase over the 3,472,579,000 kw.-hr. figure registered for the same week in 1942, but a decrease from the previous week's gain over the 1942 week of 14.9 percent.

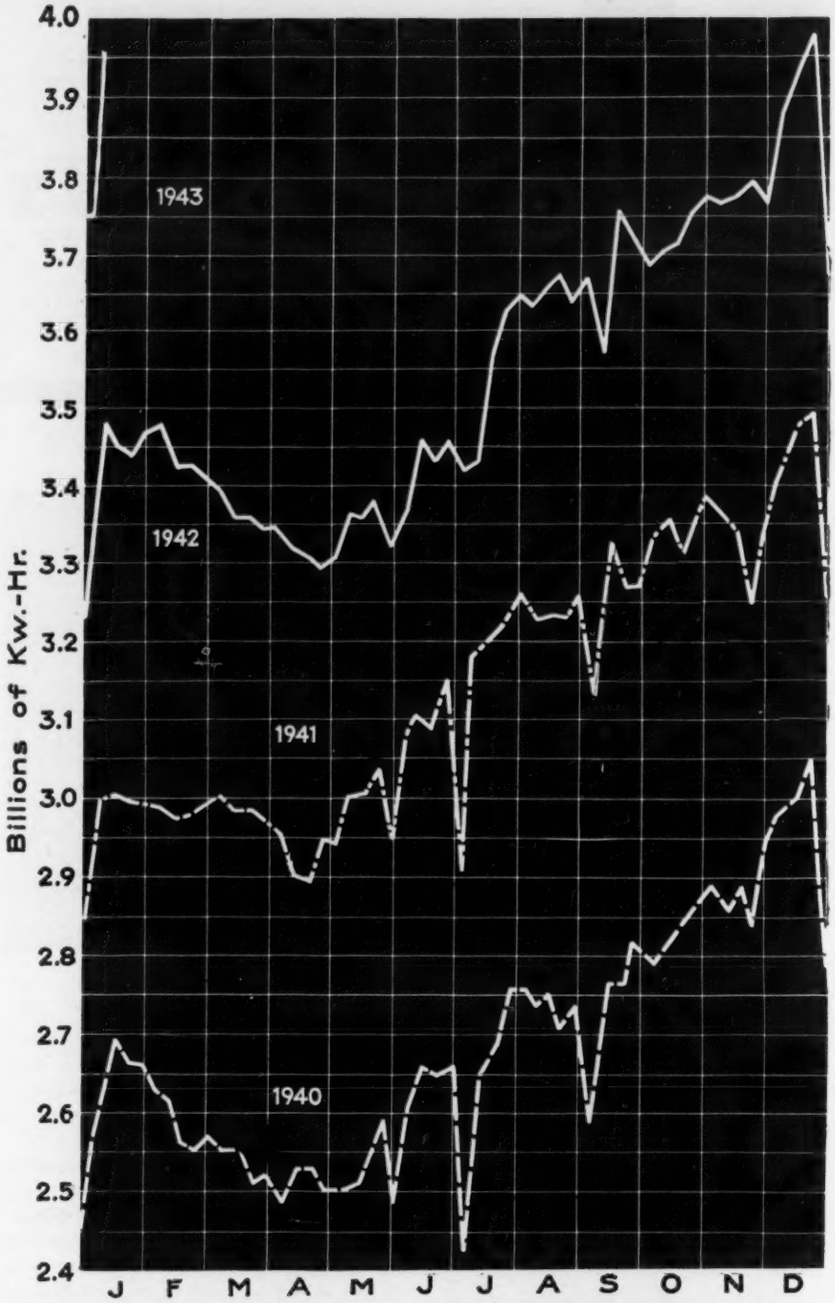
The Pacific Coast continued to lead the country's geographic regions in percentage increase over last year with 25.0 percent—down, however, from the 27.4 percent gain registered for the week of January 2. The Southern States were a close second with a 22.7 percent gain over the '42 figures, but were also down from the 25.1 percent gain of the previous week. The New England region, with a 2.7 percent gain, was just a little ahead of 1942. The Rocky Mountain and Central regions showed slight gains over the Jan. 2 week.

Weekly Output, Millions Kw.-Hr.

1943		1942		1941	
Jan. 9	3,952	Jan. 10	3,472	Jan. 11	3,002
Jan. 2	3,780	Jan. 3	3,289	Jan. 4	2,846
1942		**1941**		**1940**	
Dec. 26	3,656	Dec. 27	3,234	Dec. 28	2,757
Dec. 19	3,976	Dec. 20	3,495	Dec. 21	3,052
Dec. 12	3,937	Dec. 13	3,476	Dec. 14	3,003
Dec. 5	3,883	Dec. 6	3,415	Dec. 7	2,976
Nov. 28	3,766	Nov. 29	3,339	Nov. 30	2,932
Nov. 21	3,795	Nov. 22	3,248	Nov. 23	2,839
Nov. 14	3,776	Nov. 15	3,348	Nov. 16	2,890
Nov. 7	3,762	Nov. 8	3,369	Nov. 9	2,858

Percent Change from Previous Year

	Week Ending		
	Jan. 9	Jan. 2	Dec. 26
New England	+ 2.7	+ 4.4	+ 0.4
Mid-Atlantic	+ 6.3	+ 7.8	+ 6.5
Central Industrial	+11.6	+11.4	+10.7
West Central	+13.6	+12.6	+10.4
Southern States	+22.7	+25.1	+21.1
Rocky Mountain	+11.4	+11.0	+ 4.3
Pacific Coast	+25.0	+27.4	+28.1
Total United States...	+13.8	+14.9	+13.0



November Output Increases 13.7%

Electric energy produced for public use in November totaled 16,191,145,000 kw.-hr., an increase of 13.7 percent over production in November, 1941, according to a report issued by the Federal Power Commission.

Average daily production of electric energy for public use in November was 582,415,000 kw.-hr., a new all-time high and an increase of 2.4 percent over average daily production during the previous month. Production by water power amounted to 5,191,697,000 kw.-hr., or 35.3 percent of the total output for public use.

For the twelve months ended November 30, the publication shows, total production for public use was 183,706,468,000 kw.-hr., an increase of 12.7 percent over the 162,952,635,000 kw.-hr. produced in the twelve months ended November 30, 1941.

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Luling, Texas, Buys Distribution Lines

The city of Luling, Texas, has purchased the water system and certain electric distribution lines of the Central Power & Light Co. for $225,620. The purchase was financed by revenue bonds and warrants.

Tacoma Would Join Northwest Power Pool

Under an ordinance introduced by R. D. O'Neil, utilities commissioner, the city of Tacoma's municipal power and light system will be tied in with eleven of the largest systems in Washington, Oregon, Idaho, Utah and Montana. The measure seeks approval of the Council for the Tacoma system joining the Pacific Northwest interconnected power pool, as a means of assuring that a shortage in one district could be taken care of through the pool.

Tacoma power is already connected with Seattle, Bonneville and Grand Coulee power.

NEWS ABOUT PEOPLE

New Engineering Duties Assigned in Chicago

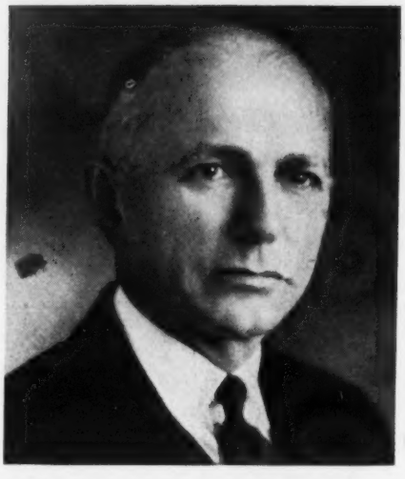
Alex D. Bailey, chief operating engineer of Commonwealth Edison Co., has been appointed assistant to the vice-president in charge of operating and engineering. He assumed his new duties January 1. He will assist Vice-President H. B. Gear in the administration of the departments under his direction and will have general supervision over Powerton generating station and its related transmission system.

Paul B. Juhnke, assistant chief operating engineer, was promoted to Mr. Bailey's former position. Mr. Juhnke was succeeded by Arthur E. Grunert, who will also continue for the present as superintendent of generating stations. Uriah Davis, assistant chief load

P. B. Juhnke

dispatcher, was appointed chief load dispatcher.

A veteran of 39 years of service with Commonwealth Edison, Mr. Bailey is widely known throughout the electrical industry. He started his utility career in 1903 as a draftsman at Harrison Street generating station and rose through the ranks to chief engineer at



A. D. Bailey

Fisk and Quarry stations, superintendent of generating stations and assistant chief operating engineer. He was elevated to chief operating engineer in 1936.

Mr. Juhnke, whose company service also dates back to 1903, worked as an electrician's helper, oil switch repairman and construction foreman before transferring to the load dispatchers office in 1905. He became chief load dispatcher in 1912 and last Fall was promoted to assistant chief operating engineer.

Entering the company's employ in 1908 as a draftsman, Mr. Grunert was successively promoted to testing engineer, assistant efficiency engineer and efficiency engineer. He was appointed superintendent of generating stations in 1934. Mr. Davis started as a substation operator in 1904, transferred to the load dispatcher's office two years later and became assistant chief load dispatcher in 1924.

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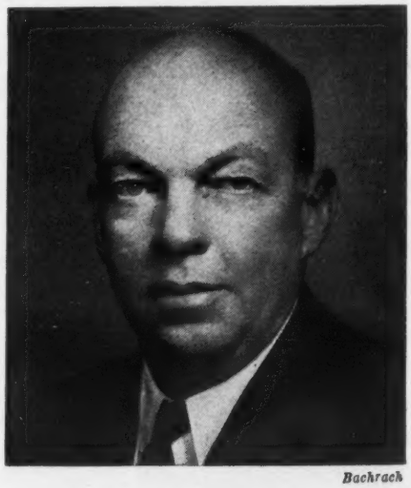
▶ EDWARD L. ROBERTS, sales manager of the Housatonic division of the Connecticut Power Co., Canaan, Conn., for the past 19 years, has retired.

Dr. Armstrong, Recipient of the Edison Medal

Dr. Edwin H. Armstrong, professor of electrical engineering, Columbia University, who was recently awarded the Edison Medal by the American Institute of Electrical Engineers (ELECTRICAL WORLD, January 2, page 17), began his engineering studies at Columbia University and became a protege of Michael I. Pupin, with whom he worked closely on many important research undertakings. While an undergraduate he became interested in the operating properties of the audion detector and set out to learn more of the principles of operation of thermionic tubes. The research that followed at his home in Yonkers, N. Y., resulted in his invention of the feedback or regenerative



Bachrach

circuit. In 1914 he published the first scientifically correct explanation of detection and amplification in the audion detector and in 1915 disclosed the regenerative and oscillating circuits.

He was graduated from Columbia University in 1913 and continued as an assistant in the department of electrical engineering. While serving as a Major in the Signal Corps in France

during the first World War he made his second invention, which was destined to be another cornerstone in the development of the radio communication art. This was the superheterodyne receiving system. The third outstanding invention was his development of the super-regenerative circuit, which was disclosed to the art in 1922. His fourth contribution to the art of electric communication was the development of wide band frequency modulation in 1933.

Dr. Armstrong has received many high honors, including the Medal of Honor of the Institute of Radio Engineers, the Egleston Medal of Columbia University, the Holley Medal of the American Society of Mechanical Engineers, the Franklin Medal of the Franklin Institute and the John Scott Medal, awarded by the board of directors of City Trusts, City of Philadelphia, 1942. He was made a Chevalier de la Legion d'Honneur by the French government in 1919. One of the nineteen national awards of "Modern Pioneer" was given to him by the National Association of Manufacturers in 1940.

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▶ EARL JOHNS, California Electric Power Co., has been transferred from Elsinore to the central office engineering department in Riverside. Taking over his former duties as superintendent at Elsinore is FRANK LUCKING, who was transferred there from Victorville.

▶ C. F. POIRIER, electrical adviser to the shipbuilding division of the War Production Board, has submitted his resignation. His duties consisted primarily of determining the productive capacity existing for various types of marine equipment, and having completed that job he said, "there is nothing more for me to do." The recent merger of Crocker-Wheeler Electric Manufacturing Co. with Joshua Hendy Iron Works makes his return to the Crocker-Wheeler organization imperious to the proper conduct of that company's war effort. Mr. Poirier is general sales manager.

▶ FRANK J. REYNOLDS, engineer of the Hartford (Conn.) Electric Light Co., retired from active duty January 1, retaining an advisory connection with that utility. Mr. Reynolds was graduated from Dartmouth College in 1889 and was connected with the General Electric Co. in relation to the installation of generating plants throughout the East and Middle West until 1917, when he was granted a leave of absence to supervise further work at Hartford, and soon joined that utility's staff. For the last quarter century Mr. Reynolds has been closely identified with the Hartford company's power plant and system developments. His experience embraces work for central stations, the U. S. Navy, and heavy railway electrification. In accepting his resignation the board of directors commended "his exceptionally efficient service to the company during the past years and his unremitting devotion to furthering the interests of the company in every possible manner."

OBITUARY

Nicholas Stahl

Nicholas Stahl, chief engineer of the Pennsylvania Power & Light Co., Allentown, whose death was announced in

ELECTRICAL WORLD (January 9, page 97), entered the manufacturing branch of the electrical industry in 1907 when he joined Westinghouse Electric & Manufacturing Co. at Pittsburgh in the capacity of engineer. In 1918 he transferred to the utility field, affiliating himself in that year with the Narragansett Electric Co., Providence, R. I. He served as general engineer and superintendent of generation for the Rhode Island utility until 1927 and the following year he was appointed chief engineer of the Allentown properties, the position he occupied at the time of his death.

In the course of his engineering career Mr. Stahl was active in the electrical industry's representative associations, holding membership on many committees from time to time. During 1923–25 he was vice-chairman and chairman of the prime movers committee, National Electric Light Association; he was a fellow of the American Institute of Electrical Engineers; senior member of the American Society of Mechanical Engineers; member Association of Edison Illuminating Companies and chairman of its committee on electric switching and switchgear 1939–1940; member of Pennsylvania Electric Association, American Society of Testing Materials, and American Gas Association.

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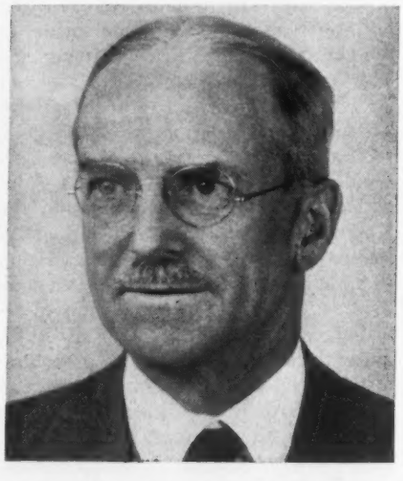
C. G. Koppitz

C. G. Koppitz, vice-president and consulting engineer of the Railway & Industrial Engineering Co., Greensburg, Pa., died, of a heart ailment, on January 6.

His career in the electrical industry began in 1896 with the operation of the steam station in San Jose, Calif., after which connection he was engaged in the erection and operation of a pioneer 1,155-ft.-head hydro development near Sonora. He then spent four years in Europe, two with the French Westinghouse company as erecting and operating engineer at the company's working exhibit which supplied power to the moving platform encircling the Paris Exhibition of 1900 and two in sales work with the British Westinghouse in London and Birmingham.

Affiliating himself with Sanderson & Porter, Mr. Koppitz engaged for several years in the erection of electrical mill equipment and hydro plants, also in the erection and operation of steam station equipment in Youngstown, Ohio. Before joining the Railway & Industrial Engineering Co. in 1914 he was connected with the Mahoning & Shenango Railway & Light Co., West Penn Power Co. and National Insulator Co. for short periods.

Mr. Koppitz made many contributions toward the improvement of blade-switching equipment, but probably the most outstanding was his in-



duction in 1925 of the "Hi-pressure Contact," first on outdoor switches and later on indoor types. He was also well known for his development of the "Koppat" line of resistors.

He was a member of the American Institute of Electrical Engineers, the American Chemical Society and the American Association for the Advancement of Science.

MANUFACTURING-MARKETS

Meter Code Revision Approved by A.S.A.

Testing of electricity meters will be done less frequently during the period of the war, according to a revision to the Code for Electricity Meters, recently approved by the American Standards Association. As a result of the present shortage of manpower, the Edison Electric Institute and the Association of Edison Illuminating Companies, two of the sponsors, suggested to the American Standards Association that the A.S.A. sectional committee on the code for electricity meters (C12) be set up as a war standards committee to prepare a revision of the section on periodic testing.

After an analysis of data obtained on meter performance, it was decided that the interval between tests of a.c. meters of 12 kva. and less could be extended to eight years without much danger that an injustice would be done either to the power companies or their customers. This revision was approved November 5, 1942, as American War Standard. The official designation is C12WS-1942.

The code for electricity meters, originally issued in 1910 by the joint action of the meter committees of the National Electric Light Association and the Association of Edison Illuminating Companies, has been revised from time to time. The most recent extensive revision was completed in May, 1941, under the sectional committee procedure of the A.S.A., with the National Bureau of Standards, Association of Edison Illuminating Companies, and the E.E.I. as joint sponsors.

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Starts New Radio Program

Westinghouse Electric & Manufacturing Co. re-entered radio on January 10 with a new program featuring John Charles Thomas, famous baritone, who will serve both as master of ceremonies and as singer. The program will be broadcast over the NBC network of 125 stations at 2:30 every Sunday afternoon, EWT, and will be a half hour in length.

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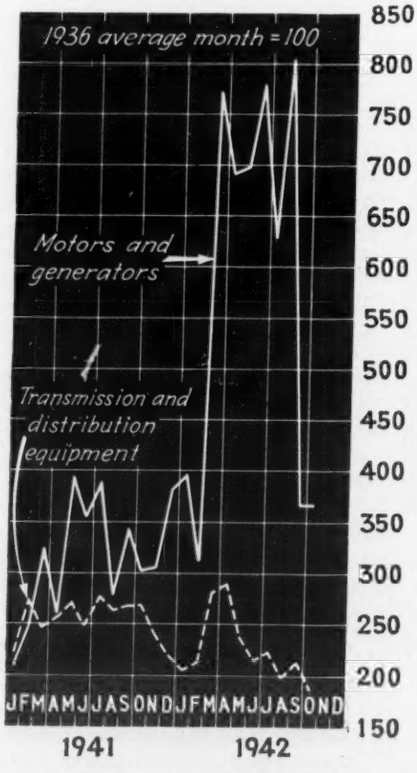
Electric Equipment Orders Decline

A report compiled by the National Electrical Manfacturers Association indicates that the curtailment of orders for motors and generators has been heavy in recent months, with transmission and distribution equipment showing a smaller decline.

The peak of orders for motors and generators was reached in August, September and October, showing sharp declines. The actual NEMA index for October was 366.7, unchanged from the previous month. In August it stood at 805.4, and in October, 1941, at 301.9.

Index of orders received for transmission and distribution equipment showed the effect of government restrictions on the manufacture of such equipment. The figure for October was 186.4, compared with 212.8 in September, and 268.3 in October, 1941.

Publication of the NEMA indices was discontinued about five months ago to allow for a complete review of the indices from the standpoint of the effect of new forces developed by the unprecedented business conditions of the last two years. It was found that the large war orders that were placed in this period created a strong upward bias in the two indices. NEMA announced that in view of the revisions made the new indices are not comparable to those previously published, although for the prewar years the differences between the two are small. In order that the new indices may be used for comparative purposes a complete set of the monthly index numbers going back to January, 1934, were published by NEMA.



NEMA INDEX, value of orders received

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G.E. Orders Reach New High in '42

Orders received by the General Electric Co. during the year 1942 reached the all-time record total of $2,003,039,000, compared with $1,132,837,000 for 1941, an increase of 77 percent, President Gerard Swope announced this week.

By quarterly periods in 1942 and 1941, the orders received were:

	1942	1941	% Inc.
First quarter.....	$299,120,000	$257,382,000	16
Second quarter...	566,250,000	263,757,000	115
Third quarter.....	474,080,000	310,251,000	53
Fourth quarter....	663,589,000	301,447,000	120
Year	$2,003,039,000	$1,132,837,000	77

The annual report covering the operations of the General Electric Co. for the year 1942 will be issued in the latter part of March.

Corning Glass Multiform Insulation

A newly perfected process of molding glass for insulation uses is announced by Corning Glass Works, and a separate department has been equipped for manufacture of the new Multiform products. In contrast to the customary molding and blowing of molten glass the Multiform process employs a combination of cold-molding batch materials and subsequent fusing to attain shapes, perforations, grooves and coil threads not usually attainable by hot-molding.

Special leaching of one of the materials fabricated by this process results in a glass which consists of 96 percent silica and is highly stable in a chemical sense. The low coefficient of expansion of this glass—approaching that of fused quartz—provides maximum dimensional stability at operating temperatures up to 900 deg. C. This composition has a resistivity of log. R = 9.7 at 250 deg. C. and a power factor less than 0.0005 at one megacycle and room temperature.

Any of the hundreds of compositions employed in the range of Pyrex brand products is adaptable to the Multiform process, and the result is a true glass as manifested in fracture. The dielectric strength is reported to exceed 500 volts per mil and the dielectric losses and power factor at high frequencies are advantageously low. For this reason most of the present production is devoted to war purposes, but mercury-arc rectifier rings have been made in large diameters. Stand-off insulators and similar applications for power frequencies are indicated.

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Hendy Purchases Pump Manufacturing Units

Announcement has been made by Charles E. Moore, president of Joshua Hendy Iron Works, Sunnyvale, Calif., of the purchase of the Pomona Pump Co. of Pomona, Calif., and its recently acquired subsidiary, the Westco Pump Division, St. Louis, Mo. Hendy also purchased the plant and equipment of the Hydril Co., Torrance, Calif., to supplement the facilities available at Pomona.

The purchase of this pump organization, serving the irrigation, mining, water treatment, central station and domestic water supply fields, gives the Joshua Hendy company an additional complete line in the machinery field. It further rounds out the scope created by the recent purchase of the Crocker-Wheeler Electric Manufacturing Co., Ampere, N. J.

Field Reports on Business

Production of war materials continues to increase and government contracts are being placed in good volume. New construction includes many small electrical sub-contracts. Price levels are moving upward at a somewhat accelerated pace. Cost of living continues to mount slowly, but steadily.

NEW YORK

Department store sales for the week ended January 2 were up 5 percent from the corresponding week a year ago, on a nationwide basis, according to the Federal Reserve Board report. This followed a gain of 10 percent for the previous week. For the latest four-week period the gain over the corresponding 1942 period was 12 percent. In the New York area sales fell somewhat behind the national figures, with a 3 percent gain registered for the week.

Engineering construction volume for the week totaled $63,928,000, a decline of 55 percent from the corresponding week in 1942. For the two weeks of the new year the 1943 total is 35 percent under that recorded for the two-week period ended January 8, 1942, according to *Engineering News-Record*.

December engineering construction declined to $373,622,000, the lowest month recorded during 1942, and averaged $74,724,000 for each of the five weeks of the month. On the weekly average basis, December volume was 51 percent below the average for the four weeks of November, but was up 11 percent compared with the average for December, 1941.

In the Pittsburgh area flood conditions were reflected in the business indices, published by the University of Pittsburgh. Coal mining was badly hit, power output was the smallest since September and car loadings fell off. During the flood week, ended January 2, steel production was at 96 percent of capacity and went up to 101 with the current week.

PACIFIC COAST

Wholesalers' inventories disclosed that low levels on most staple items were somewhat counterbalanced by heavier stocks of special items required by various branches of the services. Some adjustment of personnel is apparently at hand to meet new draft demands and the shifting weight of purchasing. January inquiries and orders are holding up well, many big encampments and housing areas of several weeks ago being now in their electrical stage.

New construction includes many electrical sub-contracts, widely scattered and usually announced as in the "under $50,000 class." Specific orders include a quantity of 3-kw. portable generators for Navy at San Diego; a $77,000 gate hoist equipment for Kennett division of Shasta Dam; $18,000 of capacitors and other carrier-current material for Los Angeles; 155 G.E. transformers, totaling $40,000, for Hawaiian Islands; 1,200 fractional-horsepower motors, costing $25,000, for a Bay region plant, and 32 100-hp. motors, costing $26,000 for a filter manufacturer.

It is significant that whereas central station purchasing is temporarily represented by such orders as $1,566 of Allis-Chalmers instrument transformers for Ampere substation of Bonneville system, inquiries totaling $150,000 each for ship cable and marine wiring equipment were reported from one yard during the past week, and such inquiries are being rapidly converted to orders.

Factory employment in California during December ran close to 60 percent over that of a year ago in personnel and nearly double that increase in payroll.

CHICAGO

Production of war materials in this area continues to accelerate as more plants are being brought into the war program. Government contracts are being placed in good volume and each week a number of firms are given their initial war order. Construction work on four huge new plants is going forward rapidly and it is expected they will be able to be in production by mid-year, at least.

Demand for electrical workers is still ahead of the available supply, with many contractors having difficulty securing enough men for the job. A number of small contractors have closed up and gone to work in the large plants. The dealer situation is still in pretty much of a muddle, with the outcome in doubt unless considerable assistance from the government is forthcoming.

Electrical permits continue to decline and during December 1,433 additional outlets were installed, as compared with 3,317 in the same month a year ago. Convenience outlets numbered 3,346, as against 10,018 in December, 1941.

Department store sales last week were 8 percent over the comparable period last year.

During the past week 108 war orders were placed with 65 companies here, including electrical equipment from Cline Electric Manufacturing Co., Federal Electric Co., General Electric X-Ray Corp. and Solar Manufacturing Co.

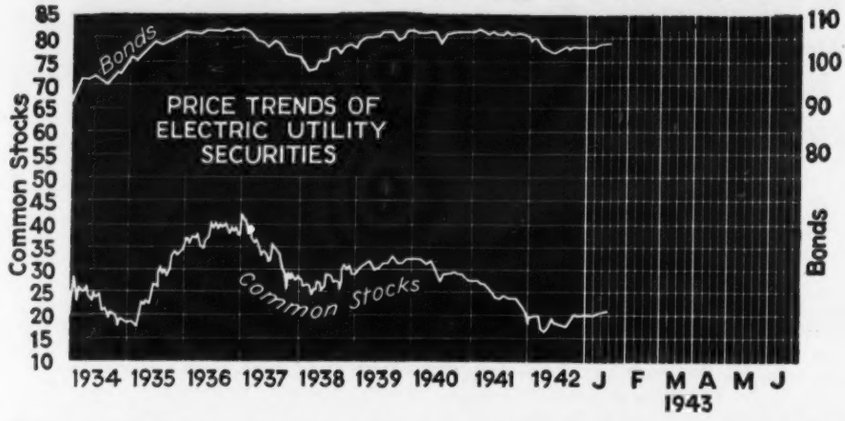
NEW ENGLAND

Activity in the electrical market is confined largely to negotiations for equipment for the merchant marine and the Navy. Manufacturers in this district are bidding on supplies and equipment for deliveries outside this area. Recent contract awards include a group of oscillators to a Massachusetts radio manufacturer, a large unspecified number of batteries and accessories for submarine propulsion, electrical portable bench tools, a fair-sized volume of insulating materials to a Boston firm, and condenser tubes to Connecticut manufacturers.

Among the electrical specialties recently bought by the Navy were electrically operated and controlled medical units involving more than $11,000 and centrifuge units costing in the neighborhood of $800 each. Radio apparatus and communication materials are very active.

Defense Plant Corporation contracts executed with manufacturers include one for equipment and additions to the plant of the Spencer (Mass.) Wire Co., a $300,000 allocation for facilities for the Aerovox Corp., New Bedford, Mass., and an increase amounting to over $2,000,000 to a contract for facilities at the United Aircraft Corp. plant at East Hartford, Conn. Conversion to coal burning and the installation of mechanical stokers are attracting interest.

Utility Stock and Bond Gains Continue



Electric light and power stock prices shot upward during the past week, carrying the "Electrical World" index to 20.9 from 20.3 the previous week; last year, 19.8. Bonds also gained, advancing to 104.1; previous week, 104.0; last year, 104.6

Court Upholds SEC on Proxy Letters

A recent decision of the U. S. Court of Appeals for the New York district upheld the Securities and Exchange Commission's power to regulate communications to stockholders having to do with the solicitation of proxies. The decision reversed a dismissal, by the U. S. District Court, of a suit brought by the SEC to enjoin Samuel Okin, New York attorney and a stockholder in Electric Bond & Share Co., from circularizing other stockholders to prevent the management obtaining proxies for the annual stockholders' meeting, held last October.

Contention of the commission, in the original suit, was that Mr. Okin's letter contained several statements which were misleading, or so incomplete that they had that effect. The letter contained no request for proxies, but contained an admonition to stockholders to withold proxies from the management or revoke those already given. This constituted a first step, the commission argued, to requesting the proxies in Mr. Okin's name.

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Bars Interest Payment on Utility Debentures

The Securities and Exchange Commission has issued an interim order prohibiting payment by North American Light & Power Co. of $154,000 interest on debentures due January 1, 1943. The SEC directed that the amount be segregated from other funds until a final order was handed down on the matter of final liquidation of the utility under the Holding Company Act.

At the hearing on the matter, counsel for North American insisted that the company was not insolvent and that no order should be issued prohibiting the payment of the interest due. In its opinion the commission said that there was no question of the utility's solvency at issue, but that there was a question pending as to whether debentures held by North American ought to be subordinated to the claims of the company's publicly held preferred stock.

Oral arguments were to be heard on January 14 to determine whether the holding company should be given an additional year in which to liquidate, the SEC said. The period ordered by the commission for North American Light & Power to liquidate expired last December 30.

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Lynn Note Issue Approved by D.P.U.

Lynn (Mass.) Gas & Electric's petition for approval of 15-year notes in the amount not less than $2,200,000 or more than $2,500,000 has been granted by the state Department of Public Utilities, the total authorized depending upon whether a 10,000-kw. steam turbine unit ordered in 1941 from General Electric but held up by the War Production Board is released to the utility. At the hearing before the board James A. Cook, general manager, stated that the company had lately appropriated about $2,750,000 for plant improvements in connection with war service to local industries. The work includes a 210,000-lb.-per hour, 400-psi. boiler scheduled to go into operation in March, 1943; two 10,000-kw. steam turbine units, one of which is now installed and the second held up as indicated above; condensing equipment, rebuilt circuit breaker facilities, and additional cable facilities to connect with the New England Power system and serve a gear manufacturing plant of the Maritime Commission.

The notes bear interest at 2¾ percent and the proceeds are to be used to refund $2,200,000 in short term notes previously issued in connection with the development of the plant.

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Agecorp Loses Plea on Philippine Unit

The Securities and Exchange Commission has denied a request of the Associated Gas & Electric Corp. trustees to strike from a divestment order the company's properties in the Philippine Islands, now in the hands of the Japanese. Associated had requested that Manila Electric Co., Escudero Service Co. and Associated Utilities Investing Co. be stricken from the SEC's divestment order, issued August 13, 1942, on the grounds that it would be impossible for the holding company to dispose of these units in the year allotted.

"Such a plea," the commission said, "is relevant to the time of and not to the necessity of disposition. Obviously, the trustees, under present circumstances, cannot dispose of their interests in the Philippine properties on a proper basis. We have no hesitancy in saying that should these same or similar facts obtain at the expiration of the one-year period we would grant an extension under Section 11 (c) of the act so far as the Philippine properties are concerned . . . "

In a supplemental order the commission ordered that the following companies be stricken from the list of subsidiaries with which the trustees are required to sever all relationships; Canadian Power Corp., York Railways Co. and New Jersey Northern Gas Co. To the list of companies which must be divested the commission added Tri-City Utilities Co. and Railway Properties Corp.

Utility Reports

	Net Income 1942	1941
*Arkansas Power & Light...	$1,274,159	$1,897,253
*Birmingham Electric	1,174,287	879,058
*Carolina Power & Light...	2,375,159	3,040,062
*Dallas Power & Light.....	1,467,228	1,973,804
*Florida Power & Light.....	1,971,113	2,584,019
*Idaho Power	1,286,771	1,244,859
*Kansas City Power & Lt...	2,986,338	3,423,701
*Louisiana Power & Light..	1,289,954	1,081,037
*Minnesota Power & Light..	1,522,339	1,676,407
*Montana Power and subs..	3,343,859	3,601,273
*Nebraska Power	1,444,854	1,624,252
*New Orleans Pub. Serv...	2,419,513	2,653,937
*Pennsylvania Power & Lt..	5,262,410	7,324,761
*Texas Power & Light.....	1,787,875	1,735,710
*Utah Power & Lt. and subs.	1,763,670	1,894,489

*Twelve months ended November 30.

New P.G.&E. Plant Begins Operation

Power from the Upper Narrows plant on the Yuba River was expected to be flowing into the Pacific Gas & Electric system some time early in 1943. The new station has a capacity of 11,000 kva. and was completed in record time. It utilizes 230 ft. of head created by a U. S. government debris dam on the Yuba River.

Meanwhile work is progressing on the Pit No. 5 development on the Pit River with present indications that power from this source will be available before the end of 1943. The California State Railroad Commission has just issued the company a permit for this development. although the utility has contended that such permission was contained in a comprehensive grant issued 17 years ago to cover complete development of the Pit River for power purposes.

The new $21,000,000 Pit No. 5 plant will have a capacity of 146,000 kw. on peak. Approximately 15 miles of new 220-kv. line will be required to connect it with the present P. G. & E. transmission network. In addition to this some $3,750,000 will be expended on additions to the Newark and Contra Costa substations to accommodate the new capacity.

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FPC Approves Bonneville Contracts

The Federal Power Commission has approved six contracts between the Bonneville Power Administration and the Defense Plant Corp. for the delivery of about 350,000 kw. of Columbia River power to six war industries in the Northwest, according to a recent announcement. Four of the plants are already in operation and have been taking Bonneville power for some time. Two others will be in operation soon.

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Lansing Plant Completion Denied

Federal officials have denied the request of the Lansing (Mich.) Municipal Board of Water and Electric Light Commissioners for authority to continue work on the $3,500,000 addition to the Ottawa street power plant, according to Otto E. Eckert, general manager.

Mr. Eckert had sought reconsideration on the grounds that the project had progressed to 60 percent of completion, with most of the work already in the hands of contractors. The request was denied following Mr. Eckert's appearance before the WPB.

Sales Opportunities

LOUISIANA—Louisiana Public Utilities Co., Lafayette, plans extensions in transmission lines, including overhead crossing. Application for permission has been made and work will be carried out as soon as granted.

OREGON—Krome Corp., Marshfield, plans new plant for extraction of chromite from beach sand, comprising main production unit and several auxiliary structures. Machinery and electrical equipment will be installed for large capacity. Entire project will cost close to $500,000, with financing by Defense Plant Corp. W. G. Heller is general manager.

SOUTH DAKOTA—Black Hills Tin Co., Tinton (Lawrence County), plans early rebuilding of reduction plant and mill, recently destroyed by fire, with loss reported close to $450,000. Electrical equipment will be installed.

LOUISIANA—City Council, Donaldsonville, plans municipal airport in vicinity of city, site now being selected. Installation will include a complete lighting system, underground conduits, control station and other facilities. Cost estimated about $1,000,000. Financing will be arranged through federal aid.

ILLINOIS—Standard Oil Co. of Indiana, 910 South Michigan Ave., Chicago, plans expansion in oil refinery for large increased output of oils, petroleum byproducts and chemical specialties for government. Several new processing and production units will be built, with installation of machinery and electrical equipment. Power house will be extended. Entire project will cost over $13,000,000, with financing by Defense Plant Corp. Work is scheduled to begin soon.

ARKANSAS—Southwest Arkansas Electric Cooperative Corp., Texarkana, has acquired electrical distribution system at Bradley, heretofore operated by Bradley Ice & Light Co. Extensions and improvements will be made, including transmission line for power supply for municipality. Permission has been granted and work will be carried out at early date.

MARYLAND—Public Buildings Administration, FWA, Washington, D. C., plans power house at new hospital in Prince Georges County. Also will install an air-conditioning system and refrigeration plant. Entire project will cost about $610,000. Kea, Ross & Walton, Hyattsville, are architects.

KANSAS—Empire District Electric Co., Joplin, Mo., plans early rebuilding of equipment storage and distributing buildings at Baxter Springs, recently destroyed by fire. No official estimate of loss announced.

KENTUCKY—Reynolds Metals Co., 311 Broadway, Louisville, manufacturer of aluminum, metal alloys, etc., will carry out expansion in plant for production for government, including new buildings and installation of machinery, electrical equipment and other facilities for large increased capacity. Cost over $1,500,000. Financing by Defense Plant Corp. Proposed to begin work at early date.

TENNESSEE—War Department, Washington, D. C., has plans under way for large base hospital, comprising group of one and multi-story buildings, with power substation, boiler house and auxiliary structures. An air-conditioning system and refrigeration plant will be installed. Entire project is estimated to cost over $5,000,000 and will be carried out under direction of U. S. District Engineer Office, Nashville. Plans are being drawn by a group of six associated architects at Asheville, N. C.

KANSAS—Department of Public Works, Wichita, plans installation of electrically operated pumping machinery and auxiliary equipment, with controls and other facilities in connection with expansion at sewage disposal works. Entire project will cost about $245,000, with financing by FWA, Washington, D. C. Proposed to carry out work soon. Black & Veatch, 4706 Broadway, Kansas City, Mo., are consulting engineers.

PENNSYLVANIA—Siboney Distilling Corp., Delaware Ave. and Shackamaxon St., Philadelphia, will convert and expand plant for production of commercial alcohol for government, with installation of machinery, electrical equipment and other facilities. Cost estimated over $450,000, with financing by Defense Plant Corp. Project is scheduled to be carried out at once.

CALIFORNIA—Board of County Supervisors, Los Angeles, and Civil Aeronautics Administration, Washington, D. C., will select site soon for proposed military airport, comprising tract of about 500 acres of land. Complete electrical equipment will be installed, including power substation, lighting system, underground conduits and distribution facilities. Fund of $770,000 has been made available by government for project, exclusive of site, which will be purchased by county.

COLORADO—Federal Solvents Corp., Lafayette, plans new plant for production of commercial alcohol for government, comprising main processing and production building and auxiliary structures, with power house. Cost estimated over $500,000, with machinery, electrical equipment and other facilities. Financing by Defense Plant Corp.

OHIO—Water Department, Cincinnati, plans installation of electrically operated pumping equipment with large capacity, including auxiliary apparatus, controls, etc., in connection with development of increased water source and improvements in present system. Entire project will cost over $6,200,000. Carl A. Eberling is waterworks superintendent.

MICHIGAN—Aluminum Co. of America, Inc., Gulf Building, Pittsburgh, Pa., has acquired former works of Republic Steel Co., consisting of large group of buildings, and will modernize and expand for new branch plant. Additional structures will be built. Cost reported close to $3,000,000, with machinery, electrical equipment and other facilities.

VIRGINIA—Bureau of Yards and Docks, Navy Department, Washington, D. C., has approved immediate construction of new battalion training base, comprising large group of shops, warehouses and other industrial buildings, housing structures, etc. Electrical equipment will be installed, with power substation, distribution lines for light and power supply, and other facilities. Cost estimated at $10,200,000. Award for building construction has been made to Doyle & Russell, Central National Bank Building, Richmond.

NEW EQUIPMENT

Floodlight

Floodlight for protective or general area lighting has bowed-in, silvered-glass reflector, causing light to be reflected back to

"L-43" floodlight with bowed-in reflector for protective lighting; may be equipped with metal visor for use in dimout areas. **General Electric Co.**, Schenectady, N. Y.

the parabolic surface, where it is redirected outward as part of the main beam. The reflector, which serves also as the floodlight casing, is shatterproof.

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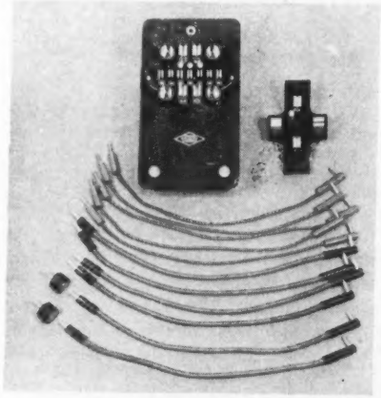
Contactor

Designed to accommodate practically every type of socket meter, master contactor has two interchangeable inserts to



"Quick Contactor" for single-phase socket type meters, 2-phase, 4-wire, self-contained, or 2-phase, 4-wire meters with transformers; 3-wire single-phase, 2- or 3-phase or network, self-contained or with transformers; 3-phase, 4-wire Y, self-contained; 3-phase, 4-wire delta, self-contained, and 3-phase, 4-wire Y, self-contained. **The States Co.**, Hartford, Conn.

provide electrical contact while meters are under test on test tables. Current-contact posts are equipped with lever-actuated cams for quick and easy operation.

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Control Switch

Immersion-proof control switch, rated 20 amp., 600-volt, alternating current. **Delta-Star Electric Co.**, 2400 Block, Fulton Street, Chicago, Ill.

New heavy-duty control, instrument or transfer switch with four-circuit control has locking features which permit locking in either the normal or pushed-in position. Turning handle to right or left closes a circuit, pushing in handle opens third circuit and pulling out handle opens fourth. A spring return restores to normal conditions by releasing handle after operation.

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Motor Starter

Approved by Underwriters' Laboratory, small starter has bi-metal compensated overload relay, a feature which is said to

"Thermaload V" solenoid motor starter, available in five sizes, 1.5 to 7.5 hp. and 110 to 550 volts, a.c.; measures 5¾ x 5¼ x 4⅛ in. **Monitor Controller Co.**, Baltimore, Md.

permit starter operation under extremes of ambient temperature. As a safeguard for the motor, a unique arrangement prevents the operator from holding the starter button in the "on" position. The button must be pressed and released before contact is made. Double-break contacts are of silver and coils are interchangeable for different voltages.

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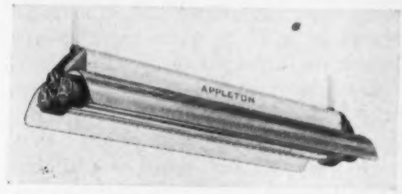
Fluorescent Unit

Explosion-proof fluorescent lighting unit has been developed to comply with requirements for Class I, Group D and Class



Explosion-proof fluorescent lighting unit; furnished with two 48-in. (40-watt) lamps, 115 and 230 volts. **Appleton Electric Co.**, 1701 Wellington Ave., Chicago, Ill.

II, Group G hazardous locations. Construction is said to eliminate need for sealing fittings and accessories. Lamps, starters and ballast are easily accessible for replacement, it is claimed. Reflector is nonmetallic type with baked white enamel finish. Terminal block is provided to make line connections and factory connections.

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Voltage Regulator

"GL-1" voltage regulator; applicable to small alternating-current generating plants having separate exciters; voltage regulation 2 percent, sensitivity one-quarter of 1 percent of normal voltage. **Burlington Instrument Co.**, Burlington, Iowa.

By using automatic cross-current compensation, new small voltage regulator is designed to control individual generating units operating in parallel with other generating units. Suitable for the control of single-, two- or three-phase alternator, the device is normally furnished for 50-60-cycle operation, for 110-120 volts or for 208-240 volts. Suitable for portable applications, the regulator is claimed not to be appreciably affected by vibration and tilting.

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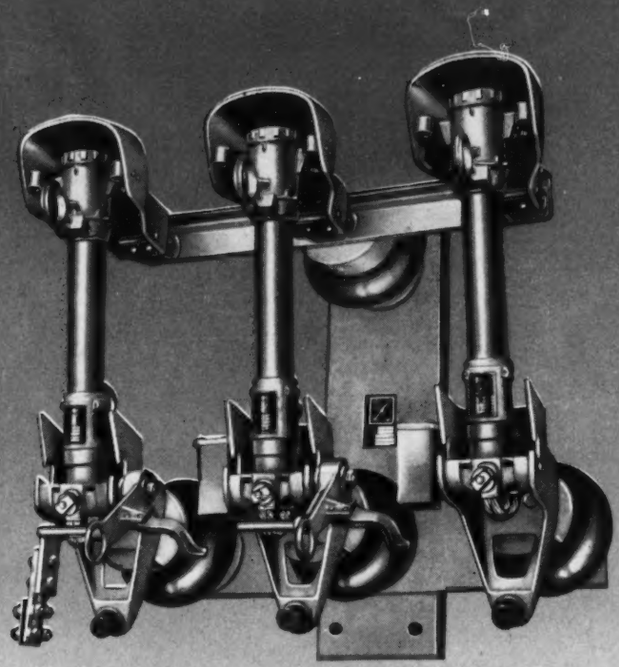
Insulators

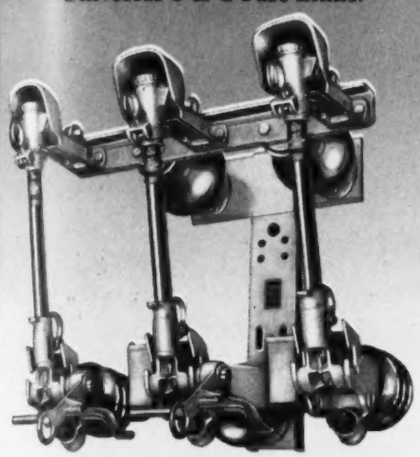
Two additions to a line of switch and bus insulators have special design between cap and pin, and jig assembly to provide strength without strain or stress, permitting them to be used in stacks of six and seven, horizontally or vertically, with a tension strength of 90,000 lb.

"No. 6095" insulator (shown) with 5-in. bolt circle and "No. 6097" with 7-in. bolt circle; designed for use in stacks on operating voltages up to and including 287 kv. **Porcelain Insulator Corp.**, Lima, N. Y.

BUYING ELECTRICAL EQUIPMENT?—McGraw-Hill's *Electrical Buyers Reference* is a convenient place to look first for manufacturers' product data, names and addresses.

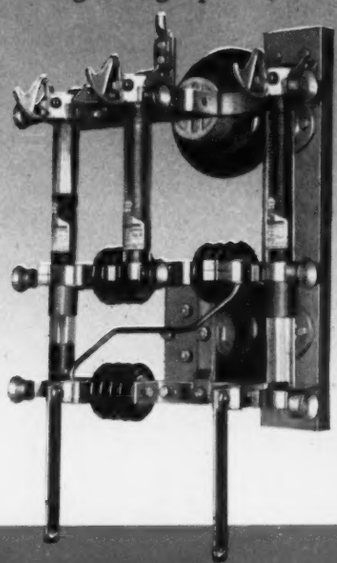


Below: Semafor MRSO 100-Ampere three-fuse Recloser, 5000 to 46,000 Volts.—Uses Universal S & C Fuse Links.



Heavy Duty Semafor HRSO 200 Amp., three-fuse Recloser, 5000 to 46,000 Volts.—Uses field replaceable Fuse Units.

Below: S & C Loadgard Reclosing Liquid Fuses made in ampere ratings to 200, in voltage ratings up to 46,000.



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